INTRODUCTION TO PLANNING RIVER-CROSSING OPERATIONS

Subcourse EN5482

EDITION B

United States Army Engineer Center and School
Fort Leonard Wood, Missouri 65473

6 Credit Hours

Edition Date: 1 November 2001

SUBCOURSE OVERVIEW

This subcourse addresses the fundamentals of river-crossing operations and engineer support to the crossings. Lesson 1 outlines the fundamentals of river-crossing operations. Lesson 2 addresses the command and control (C^2) of river-crossing operations. Lesson 3 addresses the planning of a river-crossing operation, the requirements for a division deliberate river-crossing operation, and the tactics and techniques used to conduct a retrograde river-crossing operation. The performance of all operations will be consistent with environmental laws and regulations.

There are no prerequisites for this subcourse.

This subcourse reflects the doctrine that was current at the time of preparation. In your work, always refer to the latest official publications.

Unless otherwise stated, the masculine gender of singular pronouns is used to refer to both men and women.

TERMINAL LEARNING OBJECTIVE:

ACTION:	You will identify the fundamentals and planning processes of river-crossing operations to include deliberate and retrograde river-crossing operations.
CONDITION:	You will be given the material in this subcourse.
STANDARD:	To demonstrate competency of this task, you must achieve a minimum of 70 percent on the subcourse examination.

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EN5482 Edition B Examination

Appendix A: List of Common Acronyms

FM 90-13/MCWP 3-17.1, published JAN 98.

LESSON 1

FUNDAMENTALS

OVERVIEW

LESSON DESCRIPTION:

This lesson outlines the fundamentals of river-crossing operations. It describes the three types of river crossings. To emphasize these fundamentals, the lesson includes a historical case study of an unsuccessful crossing operation.

TERMINAL LEARNING OBJECTIVE:

ACTION:	You will identify the three types of river-crossings and identify the river-crossing fundamentals.
CONDITION:	You are given the material contained in this lesson.
STANDARD:	You will correctly answer all practice-exercise questions at the end of this lesson.
REFERENCES:	The material contained in this lesson was derived from FM 90-13/MCWP 3-17.1, JAN 98.

INTRODUCTION

The purpose of any river crossing is to project combat power across a water obstacle. A river-crossing operation, by its nature, is a unique operation. Before you can understand the planning, C^2, and execution of a river-crossing operation, you must understand the basic concepts. Chapter 1 of FM 90-13 provides a detailed discussion of these concepts.

1-1. Historical Case Study-The Rapido River Crossing. Throughout history, armies crossed rivers to engage or flee from enemy forces. The ancient Persian Army built bridges during their invasion of Greece in the fifth century BC. In the fourth century BC ancient Macedonia first used professional engineers to facilitate movement across rivers. Various ancient Roman armies frequently conducted river crossings to engage other armies. Dying out after the fall of Rome and Constantinople, river crossings again became common events when armies became mobile during the eighteenth century. Armies frequently performed river crossings during the Napoleonic Wars and the two World Wars. More recently, the Israeli Army crossed the Suez Canal to encircle the Egyptians after the Egyptians first crossed the canal during the 1973 Yom Kippur War.

a. Although technology has improved crossing means, the basic fundamentals of attacking an enemy across a river have not changed since ancient times. A commander who violates these fundamentals becomes frustrated and fails to cross his force. Such was the case of the United States (US) 36th Infantry Division at the Rapido River in Italy during World War II.

b. After the capture of Naples in October 1943, the Allied 5th Army Group, consisting of the US 5th Army and British 7th Army, focused on capturing Rome. General Earl Alexander of Britain commanded the 5th Army Group. The Allied High Command wanted General Alexander to gain a political victory in Italy. The fall of Rome would symbolize the crushing of the Berlin-Rome political axis. The Allied High Command also had a military reason to capture Rome.

This would force the German Army to move units from Russia. It would also create a diversion from the Allied invasion of France. General Alexander ordered Lieutenant General (LTG) Mark Clark and the US 5th Army to capture Rome. For this battle, the US 5th Army consisted of the US II Corps (34th and 36th Infantry Divisions), the US VI Corps, the British X Corps (5th, 46th, and 56th Infantry Divisions), and the French Expeditionary Corps.

c. The German commander in Italy, Field Marshal Albert Kesselring, had successfully used delaying tactics since the start of the Allied invasion of Italy. He nearly destroyed the Allied beachhead at Salerno because he delayed the relieving force long enough to mount extensive counterattacks against the Salerno beachhead. He established three defensive systems south of Rome-the Barbara Line, the Bernhard Line, and the Gustav Line-each being progressively stronger. The lines extended from the Tyrrhenian Sea across the Italian peninsula to the Adriatic Sea. To defend these lines, he commanded the German 10th and 14th Armies. His objective was to hold Allied forces south of Rome for the winter.

d. Field Marshal Kesselring made General Baron Heinrich Von Vietinghoff, commander of the German 10th Army, responsible for defending the Italian peninsula south of Rome. The Gustav Line paralleled the Rapido and Garigliano Rivers in General Von Vietinghoff's sector (Figures 1-1 and 1-2). His engineers used the existing terrain for their defenses. They placed double-apron wire fences, booby traps, and trip-wired mines along all approaches to the rivers. The engineers also built slit trenches, dugouts, and concrete and steel bunkers along the line. His troops emplaced machine-gun and mortar positions in solid rock. They were ready to counter an Allied attack.

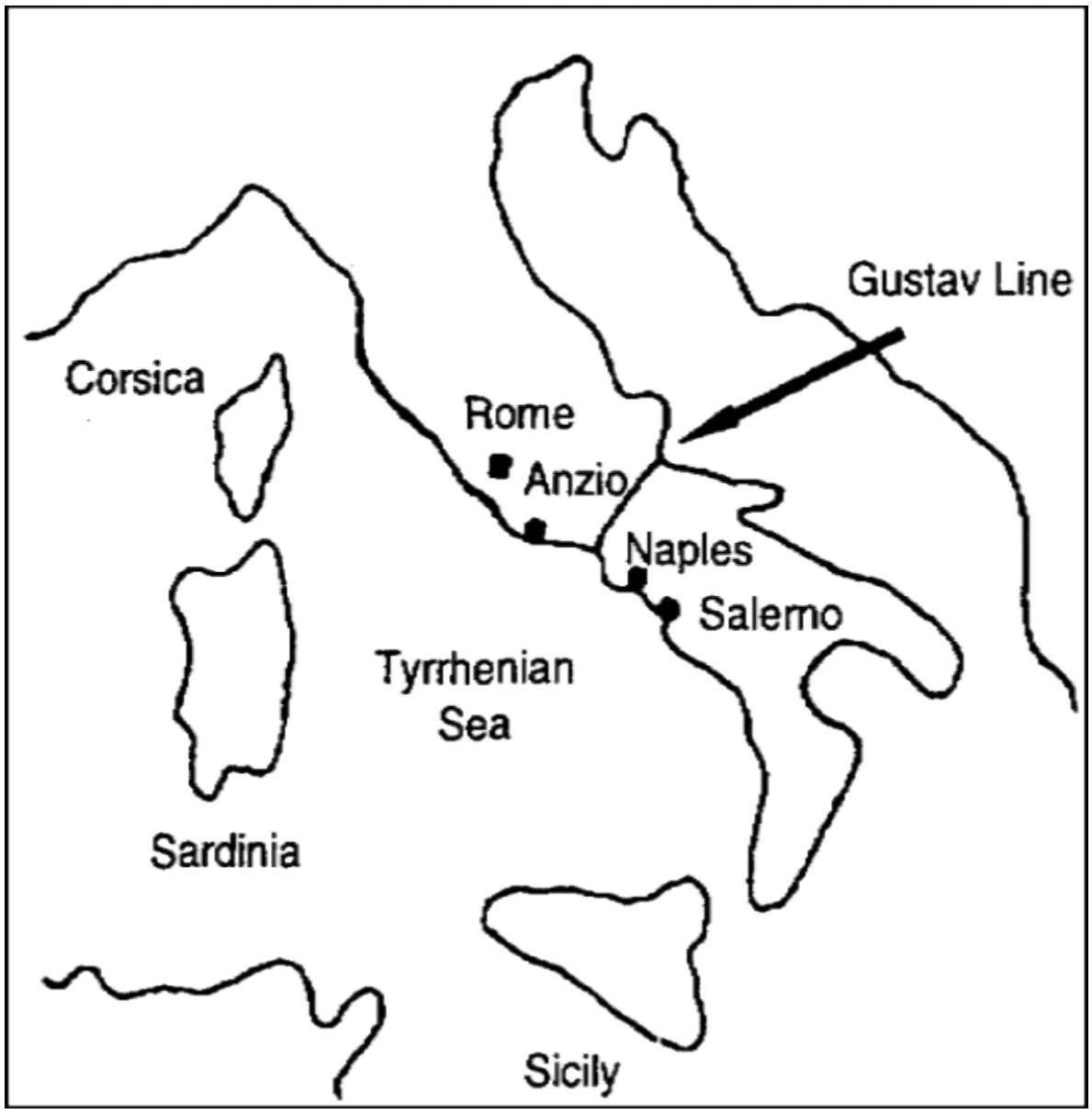

Figure 1-1. Italy in early 1944

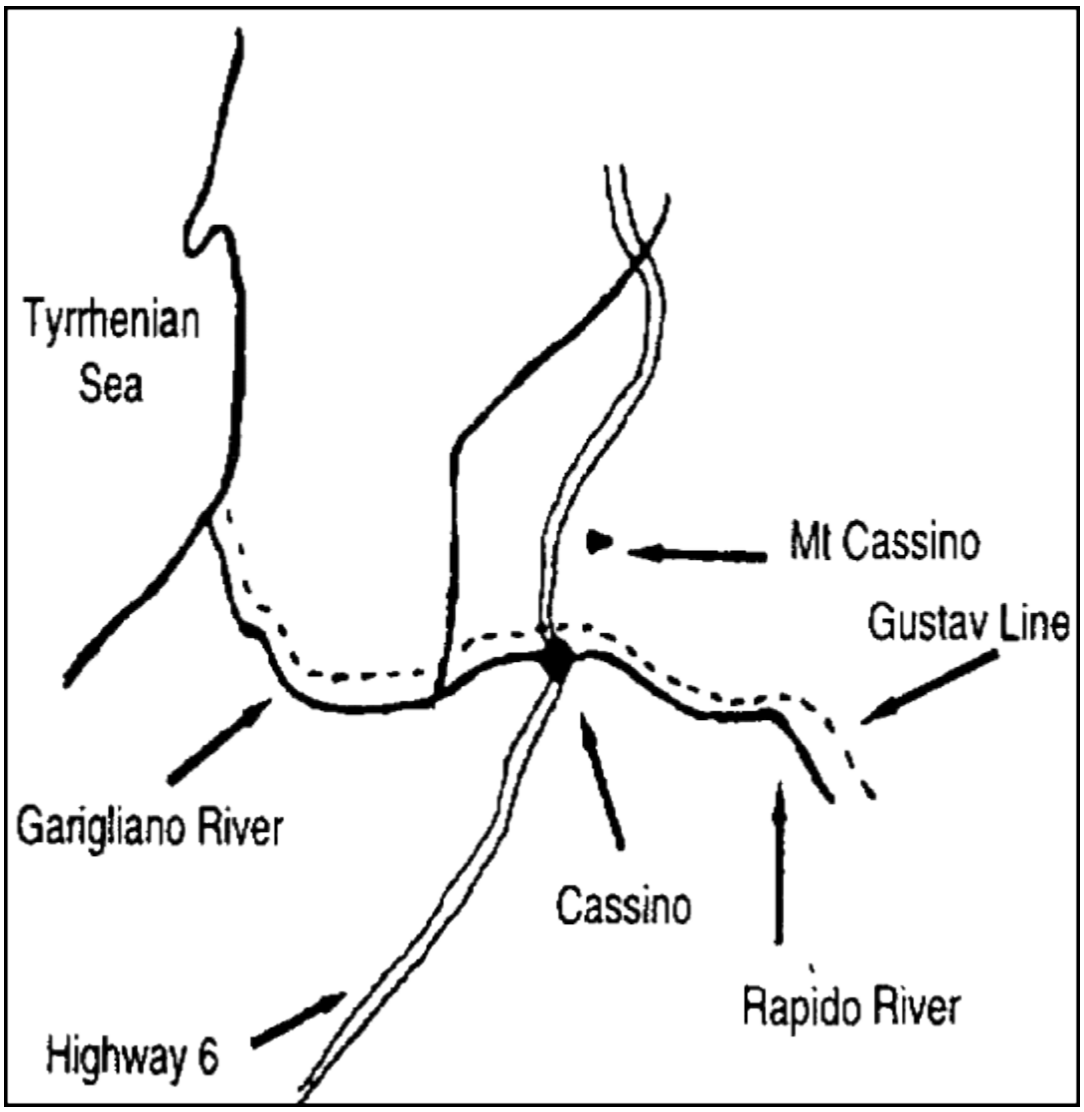

Figure 1-2. The 5th Army's area of operations

e. LTG Clark planned to attack the Gustav Line with two corps abreast. On the left, near the coast, the British X Corps was to cross the Garigliano River on 17 January. On the right, the US II Corps (specifically the 36th Division) was to cross the Rapido River on 20 January. Their immediate objectives were to gain entrance to the Liri Valley-the "gateway to Rome"-and to capture Mount Cassino.

f. These were important objectives; however, LTG Clark's main objective was the US VI Corps landing at Anzio on 22 January. Anzio is 30 miles south of Rome and 50 miles north of the Rapido River. After landing, the US VI Corps's objective was Rome. The British X Corps and US II Corps attacks were part of a large deception plan. The two corps would occupy the German 10th Army and draw their reserves away from Rome. This diversion would prevent the annihilation of the US VI Corps during its initial landing and annihilate the German 10th Army.

g. A successful British X Corps attack was essential to a successful US II Corps crossing of the Rapido River three days later. LTG L. K. McCreary, commander of the X Corps, planned to

attack with two divisions abreast across the Garigliano River on 17 January. The 5th Division would occupy the Minturno Ridge on the left while the 56th Division occupied Castelforte in the center. Most critical to the US II Corps's attack was the 46th Division reaching the southern edge of the Liri Valley on the right. This would support the US II Corps's left flank during its Rapido River crossing.

h. Opposing the British X Corps and the US II Corps was the German XIV Panzer Corps, commanded by LTG Fridolin Von Senger. The German 94th Infantry Division faced the British X Corps. The defense of this area concerned LTG Von Senger. The 94th Division was inexperienced and not well-trained. He resorted to using 24,000 mines to reinforce the division's defenses.

i. The British attacked on 17 January. They took the 94th Division by surprise. By the morning of 18 January, the British X Corps had ten battalions with heavy weapons across the Garigliano River. The 5th Division occupied Minturno Ridge while the 56th Division surrounded Castelforte by 19 January. They opened one 30-ton M2 bailey bridge across the Garigliano River on 20 January.

j. Realizing the potential Allied breakthrough, LTG Von Senger sent a request for the I Parachute Corps from the reserves held at Rome. Field Marshal Kesselring approved this request after receiving intelligence reports that enemy landings in Italy would not take place soon. The I Parachute Corps stopped the British advance.

k. Not yet discovering the I Parachute Corps movement, LTG Clark insisted on sending the main thrust of his forces across the Rapido River on 20 January. The US VI Corps would land at Anzio on 22 January.

l. While the British expanded their bridgehead, the US II Corps, commanded by Major General (MG) Geoffery Keys, prepared for its attack. The 36th Division, Texas National Guard, planned to cross the Rapido River at Saint Angelo. The division planned to force a crossing against prepared German positions and establish a bridgehead 241 miles deep. Meanwhile, the 34th Division was to tie down the German defenders in the Mount Cassino area. No reserves were available to exploit the initial attack.

m. The 36th Division would not achieve surprise. The finest combat troops in LTG Von Senger's command (the 15th Panzer Grenadier Division) waited across the Rapido River. The division was well-trained and -equipped. Its soldiers were well-led, motivated, and combat experienced. The division was awaiting an attack. It built excellent observation posts in the Mount Cassino monastery and surrounding hills and built bunkers reinforced by obstacles along the entire front. LTG Von Senger saw no need to reinforce the 15th Panzer Grenadier Division. His main concern was the British X Corps breaking through the 94th Infantry Division to his left.

n. MG Fred L. Walker commanded the 36th Division. Aware of the enemy's strength, he reluctantly planned his attack. His division engineer, Lieutenant Colonel (LTC) Oran Stoval, performed an extensive reconnaissance of the Rapido River crossing area. He found "an

appalling lack of basic engineer supplies." Corps assets soon remedied this. The river was 25 to 30 feet wide and ran between near-vertical banks 3 to 6 feet high. Water flowed swiftly and the depth varied from 6 to 12 feet. Although small and unimpressive looking, weeds and brush covered its banks on flat, marshy ground. This made for good concealment of German mines.

o. MG Walker planned to attack south of Saint Angelo with the 143rd Infantry Regiment and north of the town with the 142nd Infantry Regiment. He substituted the 141st Infantry Regiment for the 142nd Infantry Regiment after the rehearsals. He ordered a night attack because of the fixed German defenses. The German positions included excellent observation, fields of fire, and uncovered approaches to the river. MG Walker knew this violated an important fundamental-"night operations must be simple." MG Walker's outlook before the battle was pessimistic. His initial suggestion to LTG Clark was to attack on the other side of Mount Cassino. (Perhaps foremost in his mind was a day in World War I, when his inexperienced battalion slaughtered 10,000 German soldiers as they attempted to cross the Marne River.)

p. In the meantime, LTG Clark's plan changed. The 46th Division was to begin its assault across the upper Garigliano River on 17 January. They hesitated to attack until 19 January. When they did attack, they did not cross the river. The 46th Division was to help the 36th Division by securing the 36th Division's left flank. Now the original plan was impossible to execute. As a result, MG Keys requested a delay in his crossing date. LTG Clark denied his request.

q. Despite this setback, the 36th Division prepared for the attack. The 142nd and 143rd Infantry Regiments each conducted a rehearsal to practice handling river-crossing equipment. The 141st Infantry Regiment, which later substituted for the 142nd Infantry, received no such training. Close teamwork between engineers and infantrymen was lacking in this rehearsal. In addition, half the troops were inexperienced replacements in the regiments. The rehearsals did not reach their full potential in preparing for the crossing.

r. Elements from three different engineer units assembled to support the 36th Division's river crossing. Two companies of the 16th Armored Engineer Battalion reinforced the division's organic 111th Combat Engineer Battalion for the assault. Together they had four critical tasks to perform—

- ❍ Clear mines from the crossing sites by 20 January.
- ❍ Construct and maintain bridge approaches and exits before, during, and after the assault.
- ❍ Clear mines and roads in the bridgehead.
- ❍ Build bailey bridges when the enemy fire ceased.

s. The 19th Combat Engineer Regiment attached a battalion to both of the assaulting infantry regiments for the actual crossing. Each engineer battalion provided 30 pneumatic reconnaissance boats, 20 assault boats, and 4 footbridges.

t. The 19th Combat Engineer Regiment could not move its equipment to the river. There were no roads to the crossing sites. German engineers had diverted the Rapido waters onto the flats,

making them impassable to wheeled and tracked vehicles. The engineers dumped their equipment several miles from the crossing sites. Assault troops later had to carry the engineer equipment to the site, causing fatigue even before the operation began.

u. As darkness fell the evening of 20 January, a heavy fog settled into the 36th Division's area. After preparatory bombardments from the division artillery, the corps artillery, and the air forces, the 1st Battalion, 141st Infantry began its assault. Deadly, accurate German artillery fire damaged and destroyed some boats where the 19th Combat Engineer Regiment had dumped them. The German artillery scattered infantrymen (who were carrying the assault boats) in minefields to seek cover. Confusion abounded as engineer guides became lost in the fog. They led troops into previously cleared minefields that were remined by aggressive German patrols. Many assault troops strayed, took cover from shells, or refused to cross. German artillery fire knocked out equipment as it entered the water. Still, the 1st Battalion, 141st Infantry managed to erect a single footbridge by 0400 hours on 21 January. With this footbridge and the remaining boats, most of the battalion crossed the river and dug in.

v. On the right, the entire 1st Battalion, 143rd Infantry reached the exit shore by 1000 hours on 21 January. As daylight came, German artillery became more effective. A portion of the troops across the Rapido withdrew to the near bank resulting in more engineer equipment being damaged, destroyed, or lost in the swift-flowing river. The remainder of the troops became prisoners.

w. Later in the morning, LTG Clark's intelligence officer informed him that the Germans were rushing their reserves to the area. LTG Clark probably did not know the enemy reserves were to block the British X Corps's bridgehead across the Garigliano River. LTG Clark directed MG Keys to "bend every effort to get tanks and tank destroyers across promptly." MG Keys ordered MG Walker to cross the Rapido River again early that afternoon. The 141st and 143rd Infantry Regiments were to renew their attacks in the same locations. The regiments postponed their attacks until 1600 hours because engineers had not moved the boats up in time.

x. The 3rd Battalion, 143rd Infantry, using smoke as concealment, succeeded in crossing all its rifle companies by 1830 hours. Engineers constructed a footbridge, allowing some heavy crew-served weapons to cross. The 2nd Battalion began crossing the river behind the 1st Battalion. Companies E and F of the 2nd Battalion crossed but had to dig in 500 yards from the river. At this point, LTC Ralph J. Butcher, the US II Corps operations officer, violated the standing operating procedure (SOP). LTC Butcher decided to install bailey bridges despite enemy small-arms fire in the area. Normally, engineers emplace pontoon bridges on the heels of an assault crossing when the crossing site is secured. The engineers started construction on the bailey bridges but none of the bridges were completed due to enemy small-arms fire. The 1st Battalion started its assault at 1600 hours. By 1835 hours, A and B Companies were across the river, but C Company did not make it across until midnight. The engineers erected footbridges by midnight, but the bridges only served to permit men to straggle back to the near shore on one excuse or another. Unable to advance more than 200 yards from the river, the 143rd Infantry suffered heavy losses. The battered regiment withdrew to the near shore on the afternoon of 22 January.

y. North of Saint Angelo, the 141st Infantry launched its second attack at 2100 hours on 21 January. Only a few boats remained. Part of F Company, 2nd Battalion crossed and knocked out the immediate enemy machine-gun positions and other direct fires. By 0200 hours, engineers built two footbridges across the river allowing the rest of the 2nd Battalion and the 3rd Battalion to cross by dawn. The two battalions dug in after advancing only 1,000 yards and suffering heavy losses. Meanwhile, the river washed away or German fire destroyed the footbridges. At daylight the German artillery fire became more destructive. By early afternoon, German fire killed or wounded every commander on the exit side except one. It destroyed all the boats. The infantrymen on the exit side were isolated and leaderless. The fighting finally stopped at 2000 hours. About 40 men made it back to the near shore. The rest were either killed, wounded, or captured.

z. The Germans defeated the 36th Division. The division lost 1,681 soldiers in the two regiments that tried to cross the Rapido River. Attached units suffered several hundred additional losses. The Germans took 500 American prisoners during the two-day battle. The Germans suffered few losses and held their positions along the river.

1-2. Reasons for Failure. The 36th Division's river-crossing operation failed for numerous reasons.

a. The division ignored the six river-crossing fundamentals:

- The division did not achieve the most important fundamental of *surprise*. The German 15th Panzer Grenadier Division, alerted by the nearby British attack, awaited the attack in prepared positions.
- The division did not conduct *extensive preparations* before its attack. The deception plan failed. One regiment did not conduct a rehearsal. The other regiment conducted only one rehearsal.
- The division did not have a *flexible plan*. They marked no alternate approaches or lateral routes. They did not stockpile reserve engineer equipment to replace losses or open alternate crossing sites.
- The division did not maintain *traffic control* during the initial crossings. The engineers guiding the infantry became lost.
- The division lacked an adequate crossing *organization*. The division had no military police (MP) units for traffic control. The artillery was ineffective in destroying German artillery. The division also lacked reserves to exploit the initial attack. The 142nd Infantry did not take part in the battle. The initial assault regiments, when stopped by German fire, had no follow-on forces to continue the crossing.
- The division lacked the necessary *speed* to concentrate superior combat power at decisive points before the Germans could. Once across the river, the attack stopped. The leadership took no extraordinary measures to speed up the forward movement of troops to decisive points. Instead, their units dug in along the river in unfavorable positions.

b. In addition, their crossing attempt failed because of the following specific reasons:

- Control of the near bank was never complete. German patrols operated in the area and their artillery fire covered the areas.
- Poor selection of crossing sites and poor preparation of approaches to the crossing sites, including mine clearance, made movement difficult.
- Their inability to erect vehicular bridges.
- The vulnerability of pneumatic floats to small-arms fires.
- Their failure to follow the fundamentals of crossing on a wide front with many crossing sites.
- Reduced effectiveness of artillery support. The overuse of smoke hampered forward observers.
- Superior German positions integrated obstacles with direct and indirect fires.
- Poor infantry-engineer coordination due to the lack of complete rehearsals.
- Lack of detailed, prior planning. This led to an abnormal amount of changes with corresponding confusion.
- Deviation from the tactical plan. This required the British 46th Division to secure the left flank before the 36th Division attacked.
- A last-minute change by the corps operations officer to erect bailey bridges. This change came too late and only added to the confusion.
- Darkness, fog, and smoke concealed the German positions.
- Failure to mark lanes properly. This caused engineers to lose their way and lead troops into minefields.
- The combination of factors that produced low morale, incomplete coordination, and hesitant action of engineers and infantrymen.
- Too many troops were taking part in their first action while under fire.

This lesson described the fundamentals of river-crossing operations. Specifically, it outlined the—

- Three types of river crossings (hasty, deliberate, and retrograde).
- Six river-crossing fundamentals (surprise, extensive preparation, a flexible plan, traffic control, organization, and speed).

Failure to follow the six river-crossing fundamentals leads to defeat as shown during the failed crossing of the Rapido River.

LESSON 1
PRACTICE EXERCISE

Note: The following exercises are study aids. Print this sheet and write your answer in the space provided below each question. When you have finished answering all the questions for this lesson, compare your answers with those given by following the link at the bottom of this page. Review the lesson as necessary.

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1. List the three types of river crossings.

2. What characterizes a deliberate river crossing?

3. What forces comprise the deliberate river-crossing organization?

4. Which type of river crossing features decentralized control at the brigade level?

5. The 52nd Infantry Division (Mechanized) encounters a river obstacle during offensive operations. The enemy's 120th Motorized Infantry Division occupies strong defensive positions on the far shore. The width of the river prevents fording of vehicles. The division stops and requests additional bridging assets. What type of river crossing must the 52nd Infantry Division (Mechanized) execute?

6. The 53rd Armored Division encounters a river obstacle during offensive operations. No organized enemy defenses exist on the far shore, but the enemy destroyed the only bridge in the division's sector. The division engineer states that the river is fordable at numerous locations. The division commander orders the 1st Brigade to continue its advance by forcing a crossing without pausing to wait for engineer support. What type of river crossing must the 1st Brigade execute?

7. List the river-crossings fundamentals.

8. What was the purpose for the crossing operation at the Rapido River in 1944?

9. Which violated fundamental contributed more than any other to the 36th Division's defeat at the Rapido River? Why was this fundamental so vital to success?

ANSWER KEY AND FEEDBACK

1. List the three types of river crossings.

   Hasty, deliberate, and retrograde. See FM 90-13.

2. What characterizes a deliberate river crossing?

   A significant water obstacle, strong enemy resistance, and the necessity to clear entry and/or exit banks of enemy forces. See FM 90-13.

3. What forces comprise the deliberate river-crossing organization?

   Assault, maneuver-support, and bridgehead forces. See FM 90-13.

4. Which type of river crossing features decentralized control at the brigade level?

   Hasty. The hasty crossing features the decentralized control of the operation by the crossing-brigade headquarters. See FM 90-13.

5. The 52nd Infantry Division (Mechanized) encounters a river obstacle during offensive operations. The enemy's 120th Motorized Infantry Division occupies strong defensive positions on the far shore. The width of the river prevents fording of vehicles. The division stops and requests additional bridging assets. What type of river crossing must the 52nd Infantry Division (Mechanized) execute?

   Deliberate. The deliberate crossing is characterized by strong enemy resistance and a significant water obstacle. See FM 90-13.

6. The 53rd Armored Division encounters a river obstacle during offensive operations. No organized enemy defenses exist on the far shore, but the enemy destroyed the only bridge in the division's sector. The division engineer states that the river is fordable at numerous locations. The division commander orders the 1st Brigade to continue its advance by forcing a crossing without pausing to wait for engineer support. What type of river crossing must the 1st Brigade execute?

   Hasty. A hasty river crossing is a continuation of an attack across the river with no intentional pause at the water to prepare, so that there is no loss of momentum. See FM 90-13.

7. List the river-crossings fundamentals.

   Surprise, extensive preparation, a flexible plan, traffic control, organization, and speed. See FM 90-13.

8. What was the purpose for the crossing operation at the Rapido River in 1944?

   To gain entrance to the Liri Valley - the "gateway to Rome" - and to capture Mount Cassino.

9. Which violated fundamental contributed more than any other to the 36th Division's defeat at the Rapido River? Why was this fundamental so vital to success?

   Surprise. A force that fails to achieve surprise will usually fail in the crossing attempt.

   All crossing fundamentals were violated to some degree during this operation, but the major cause of defeat was the failure to achieve surprise. Without the element of surprise, the crossing force faced strong enemy resistance. This put the crossing force at such a great disadvantage that it could not mass superior combat power on the far shore. Without surprise, a river crossing cannot succeed.

LESSON 2

COMMAND AND CONTROL

OVERVIEW

LESSON DESCRIPTION:

This lesson addresses the C^2 of river-crossing operations. It describes the control elements, the necessary communications networks, and the control measures used in a river-crossing operation.

TERMINAL LEARNING OBJECTIVE:

ACTION:	You will identify the control elements, the communications networks, and the control measures necessary for a successful river-crossing operation.
CONDITION:	You are given the material contained in this lesson.
STANDARD:	You will correctly answer all practice-exercise questions at the end of this lesson.
REFERENCES:	The material contained in this lesson was derived from FM 90-13.

INTRODUCTION

Effective C^2 is essential for a successful river-crossing operation. Normally, during a river-crossing operation, both a division and a brigade are task-organized with unfamiliar assets (such as bridge companies). This, besides the requirement to pass a large volume of traffic across a water obstacle quickly, makes effective C^2 very difficult. Chapter 3 of FM 90-13 describes the procedures used to establish effective C^2 (see FM 90-13).

This lesson described the C^2 of river-crossing operations. Specifically, it outlined the—

- Control elements used in a river-crossing operation.
- Communications networks necessary for a river-crossing operation.
- Control measures used in a river-crossing operation.

COMMAND AND CONTROL

GENERAL

Unity of effort is established by the C2 emplaced on the maneuver units, the crossing-force headquarters, and the supporting units. Unit organization and traffic control are fundamental to successful river-crossing operations. They enable the commander to apply the tactics discussed in Chapters 5 and 6. This chapter covers the techniques and procedures used to establish the crossing organization, maintain control of forces, and hand off responsibilities between echelons as the operation progresses.

ORGANIZATION

Division and brigade commanders organize their forces into assault, maneuver-support, bridgehead, and breakout forces for river-crossing operations. Assault forces seize the far-shore objective to eliminate direct fire on the crossing sites. Maneuver-support forces consist of corps combat engineers, bridge companies, MP, and chemical units that provide crossing means, traffic control, and obscuration. Bridgehead forces secure the bridgehead. Breakout forces cross the river behind the bridgehead forces and attack out of the bridgehead.

CONTROL ELEMENTS

Division and brigade commanders are responsible for crossing their formations. They organize their staffs and subordinate commanders to help them control the crossing (see *Table 3-1*.) Division and brigade headquarters operate from echeloned CPs. They are the tactical, main, and rear CPs and provide the staff and communications support for planning and executing river crossings. The CPs may need some temporary augmentation or realignment of internal staff elements for the crossing. *Figures 3-1 and 3-2* show the necessary control elements for deliberate and retrograde river-crossing operations. Each of the control elements is discussed below.

Table 3-1. CP tasks (deliberate crossing)

Phases CPs	Advance to the River	Assault Across the River	Advance From the Exit Bank	Secure the Bridgehead Line	Continue the Attack
DTAC (crossing force's headquarters)	Coordinates the lead brigade's seizure of nearshore objectives	Coordinates the lead brigade's dismounted assault of the river to seize the far-shore objectives	Coordinates the lead brigade's seizure of exit-bank and intermediate objectives	Coordinates the lead brigade's seizure and securing of bridgehead objectives and prepares to cross the reserve brigade (breakout forces)	Controls the breakout force's attack out of the bridgehead and passes the crossing force's responsibilities to the DREAR

DMAIN	Coordinates deep operations to isolate the division's advance to the river	Coordinates deep operations to isolate the crossing area and far-shore objectives	Coordinates deep operations to isolate exit-bank and intermediate objectives	Coordinates deep operations to isolate the bridgehead	Coordinates deep operations to isolate the enemy's attack against corps objectives
DREAR	Sustains the fight	Sustains the fight	Sustains the fight	Sustains the fight	Assumes the role of the crossing force's headquarters
BTAC	Coordinates the lead TF's seizure and securing of nearshore objectives	Coordinates the dismounted assault crossing of the river to secure the far-shore objectives	Coordinates the TF's attack to seize and secure exit-bank and intermediate objectives	Coordinates the TF's seizure and securing of bridgehead objectives	Prepares to reorganize and follow the breakout force's attack out of the bridgehead toward the division's deep objectives
BMAIN (crossing-area headquarters)	Moves into the crossing area to provide traffic control, crossing means, and obscuration	Coordinates assault crossing means for TFs dismounted and controls obscuration of the crossing sites	Controls follow-on TFs passing through the crossing area into attack positions	Controls the passage of the brigade's units through the crossing area and prepares to cross breakout forces	Passes crossing-area control to the supporting corps's engineer battalion

Figure 3-1. Control elements for a deliberate crossing (brigade focus)

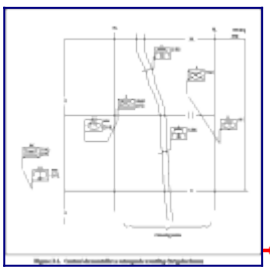

Figure 3-2. Control elements for a retrograde crossing (brigade focus)

DIVISION HEADQUARTERS

The division tactical CP (DTAC) controls the lead brigades' (bridgehead force) attack across the river, since this is the division's close fight. It may reallocate crossing means or movement routes to the river between brigades as the battle develops. The DTAC is the crossing-force headquarters.

The division main CP (DMAIN) prepares the river-crossing plan. It also directs the division's deep operations to isolate the bridgehead from enemy reinforcements and counterattacking formations. As a guide, the DMAIN displaces across the river after the division reserve. For division crossings, a traffic-control cell schedules, routes, and monitors traffic behind the lead brigades. The cell collocates with the DMAIN. The Assistant Chief of Staff, G4 (Logistics) (G4) provides the cell nucleus.

The division rear CP (DREAR) sustains the crossing for other division operations. Once the DMAIN displaces across the river, the crossing becomes a rear operation that the DREAR controls.

CROSSING-FORCE COMMANDER(CFC)

The division commander normally designates an assistant division commander (ADC) as the CFC to take charge of controlling the division crossing.

CROSSING-FORCE ENGINEER(CFE)

A crossing division receives support from a CFE, who is normally the commander of an

engineer group from the corps engineer brigade. He provides additional staff planners for the CFC and coordinates engineer support to the crossing-area commanders (CACs).

BRIGADE HEADQUARTERS

Each brigade headquarters operates from echeloned CPs, the brigade tactical CP (BTAC), and the brigade main CP (BMAIN). The BTAC controls the advance to and the attack across the river. It displaces across the river as soon as practical after the assault across the river to control the fight for exit-bank, intermediate, and bridgehead objectives.

The BMAIN controls the crossing of the rest of the brigade. It prepares the brigade crossing plan and provides the staff nucleus to coordinate it. For brigade crossings, the Supply Officer (US Army) (S4), assisted by the supporting MP unit leader or engineers if available, organizes a small, temporary traffic-control cell collocated with the BMAIN.

CROSSING-AREA COMMANDER

Once the lead battalions assault across the river and secure the far-shore objective, the crossing area is activated. The CAC, normally the brigade's executive officer (XO), controls the movement of forces inside the crossing area. The BMAIN controls the maneuver-support force that consists of corps engineers, bridge companies, and MP and chemical units. This leaves the brigade commander free to direct key activities while an officer who is directly responsible to him runs the crossing. The CAC controls-

- The movement and positioning of all elements transiting or occupying positions within the crossing area.
- Security elements at crossing sites.
- Maneuver-support forces, such as engineer, MP, and chemical units within the crossing area.

CROSSING-AREA ENGINEER(CAE)

Each forward brigade will normally be supported by a direct-support engineer battalion from the corps. The engineer battalion commander is responsible to the CAC for the engineer crossing means and sites. He informs the CAC of changes, due to technical difficulties or enemy action, that render a crossing means inoperable or reduce its capacity. He commands those engineers tasked to move the force across the river; they remain there as the attack proceeds beyond the exit-bank objectives. The division engineer battalion focuses on supporting the lead brigades at exit-bank, intermediate, and bridgehead objectives and is not normally involved in the river crossing.

CROSSING-SITE COMMANDER(CSC)

Each crossing site has an engineer, either a company commander or a platoon leader, who is responsible for crossing the units sent to the site. Normally, the CSC is the company commander for the bridge unit operating the site. He commands the engineers operating the crossing means and the engineer regulating points (ERPs) at the call-forward areas for that site. He maintains the site and decides on the immediate action needed to remove broken-down or damaged vehicles that interfere with activities at the site. He is responsible to the CAE and keeps him informed on the status of the site.

UNIT-MOVEMENT-CONTROL OFFICER

Each battalion and separate unit commander designates a movement-control officer, who coordinates the unit's movement according to the movement-control plan. He provides staff planners with detailed information on the unit's vehicle types and numbers.

COMMUNICATIONS

Figures 3-3 and 3-4 depict the communications networks within a crossing area. In the hasty-crossing example, a brigade making a supporting attack conducts a crossing with its normal slice of combat-support forces plus a corps bridge company. More assets are available from the division and corps in the deliberate-crossing example. Wire is the preferred means of communications in a river crossing when there is sufficient time to prepare it. The corps engineer battalion will establish wire communications with the nearshore crossing area according to the crossing plan.

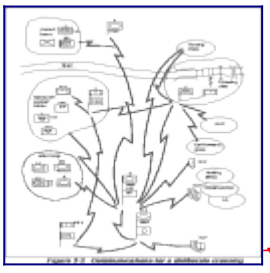

Figure 3-3. Communications for a deliberate crossing

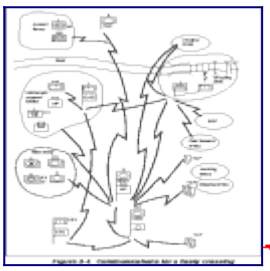

Figure 3-4. Communications for a hasty crossing

CONTROL MEASURES

The commander uses control measures to delineate areas of responsibility for subordinates and to ease traffic control. *Figure 3-5* illustrates the control measures described below.

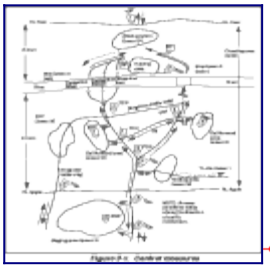

Figure 3-5. Control measures

RELEASE LINES (RLS)

As used in river-crossing operations, RLs are used to delineate the crossing area. RLs are located on both the far and near shores and indicate a change in the headquarters that is controlling movement. RLs are normally located within 3 to 4 kilometers of the river and on easily identifiable terrain features, if possible.

CROSSING AREAS

Crossing areas are controlled access areas that decrease congestion at the river. This permits swift movement of forces. Each lead brigade has a crossing area on both sides of the river that is defined by brigade boundaries and RLs. Crossing areas normally extend 3 to 4 kilometers on each side of the river, depending on the terrain and the anticipated battle.

WAITING AREAS

Waiting areas are located adjacent to the routes or axes of advance. Commanders use the following waiting areas to conceal vehicles, troops, and equipment while waiting to resume movement or to make final crossing preparations:

- Staging areas.
- Call-forward areas.
- Holding areas.
- Attack positions.
- AAs.

STAGING AREAS

Staging areas are battalion-size waiting areas outside the crossing area where forces wait to enter the crossing area. The brigade traffic-control cell handles units' movement into staging areas. The CAC controls movement from the staging areas into the crossing areas. MP operate traffic-control posts (TCPs) at staging areas according to the crossing and traffic-circulation plans. They emplace temporary signs along the route from the staging area through the crossing area to guide convoys. Units make crossing preparations and receive briefings on vehicle speed and spacing in the staging areas. Staging areas-

- Are located to support the crossing concept.
- Are far enough back to permit the rerouting of the battalion along other roads or to alternate crossing sites.
- Are easily accessible from major routes.
- Have sufficient area for dispersing a battalion-size unit.
- Provide concealment.

CALL-FORWARD AREAS

Call-forward areas are company-size waiting areas located within the crossing area. Engineers use them to organize units into raft loads, or crews use them to make final vehicle swimming preparations. The CAC controls movement from the staging area to the call-forward area. The CSC directs movement from the call-forward area to the crossing site and on to the far-shore attack position. As a minimum, each CSC operates his own call-forward area. Call-forward areas-

- Are located to support the crossing plan.
- Are company size within the crossing area.
- Are easily accessible from routes.
- Are planned with a minimum of one per crossing site.
- Have ERPs collocated with them.
- Are used to organize units into raft loads.
- Are the final preparation areas before going to the crossing site.
- Are normally operated by engineers.

HOLDING AREAS

Holding areas are waiting areas that forces use during traffic interruptions. Units move into these areas when directed by TCP personnel and disperse rather than stay on the roads. Holding areas are battalion size outside of the crossing area and company size within it. Far-shore holding areas are used to organize return traffic. MP and engineers, if available, operate holding areas according to the crossing and traffic-circulation plans. Established as needed on both sides of the river, holding areas-

- Are used as call-forward areas for return traffic from the far shore.
- Are located to support the crossing plan.
- Are easily accessible from routes.
- Have sufficient area for dispersion.

- Provide cover and concealment.
- Are defensible.
- Maximize traffic flow with minimum control.

ATTACK POSITIONS

Attack positions are the last positions occupied or passed through by the assault echelon or attacking force before crossing the line of departure. Within the bridgehead, the attack position is the last position before leaving the crossing area or bridgehead line.

ASSEMBLY AREAS

AAs are areas in which a force prepares or regroups for further action.

ENGINEER EQUIPMENT PARKS (EEPS)

EEPs are areas located a convenient distance from bridging and rafting sites for assembling, preparing, and storing bridge equipment and material. They are at least 1 kilometer from the river and hold spare equipment and empty bridge trucks that are not required at the crossing sites. EEPs should be located where they do not interfere with the traffic to the crossing sites and where equipment can be concealed and dispersed. Ideally, routes leading from EEPs to the crossing sites are not the same routes used by units crossing the river.

TRAFFIC-CONTROL POSTS

In river crossings, TCP personnel assist the crossing-area headquarters in traffic control by reporting and regulating the movement of units and convoys. TCP personnel relay messages between the crossing-area headquarters and moving units. The provost marshal identifies locations that need or require TCPs. MP or engineers, if available, operate TCPs on both banks of the river to control traffic moving toward or away from it. TCPs are additionally operated at major or critical crossroads and road junctions, staging areas, holding areas, and ERPs.

ENGINEER REGULATING POINTS

ERPs are technical checkpoints which are used to ensure that vehicles do not exceed the capacity of the crossing means. They help maintain traffic flow. Vehicles which will not be allowed to cross are removed so that they do not cause a traffic backup at the actual crossing site. Engineers man the ERPs and report to the CSC. TCPs are collocated with the ERPs to ensure that all vehicles clear the call-forward areas. An additional duty of ERP personnel is to give the drivers final instructions on site-specific procedures and other information such as speed and vehicle intervals. As a minimum, each crossing site requires an ERP at its own call-forward area. If sufficient engineer assets are available, ERPs may be established at far-shore holding areas to regulate rearward traffic.

CROSSING PLAN

The crossing plan is integrated throughout the division's and brigade's operation orders (OPORDs) and is as detailed as time permits. The crossing annex to the OPORD contains much but not all of the plan. It has the crossing overlay and the crossing synchronization matrix.

The crossing overlay shows the crossing areas, the crossing sites, the routes leading up to them from waiting areas, and all the control measures necessary for the crossing (see *Figure 3-6)*. The crossing synchronization matrix is a tool to adjust the crossing plan as the battle develops. It shows crossing units in relation to their planned crossing times and locations. See *Appendix B* for an example matrix.

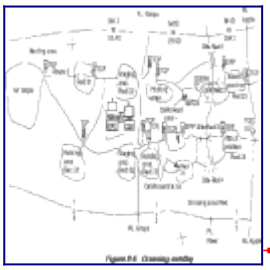

Figure 3-6. Crossing overlay

The *task organization paragraph and paragraph 5* of the OPORD contain the organization and command portions of the crossing plan. For more information on the development of the crossing plan, see *Chapter 4*.

CROSSING CONTROL

Commanders use control measures to operate, delegate authority, and lead from any critical point during the river-crossing operation while synchronizing other critical actions throughout their area of operations.

ASSAULT ACROSS THE RIVER

Battalion task forces (TFs) conducting the assault across the river move to it under the direct control of their brigade commanders. The assault TFs using rubber boats 15 (RB15s) follow the procedures in *Chapter 8*. The brigade commander keeps the remainder of the brigade back from the river to avoid congestion. Elements not engaged in security or supporting the crossing occupy AAs and prepare for movement across the river.

CROSSING-AREA OPERATIONS

After the assault across the river, the brigade has an initial position on the far shore and is no longer fighting to seize the exit bank. The brigade needs its follow-on forces across as quickly as possible. The battalions can now cross without engaging in combat at the river. The brigade commander activates the crossing area to move forces rapidly and efficiently. The urgent need to get tanks across the river means the rafting stage often begins before terrain on the far shore is secure to the planned RL. Therefore, the crossing area is initially limited to the near shore. The first fighting vehicles swimming or rafting across under this circumstance have limited space to regroup before commitment to the fight.

As the initial battalions cross, they gain terrain to the necessary depth, and as control elements cross to the far shore, the brigade commander extends the crossing area out to the planned RL. Thereafter, units move completely through the crossing area under the CAC's control and exit it in a tactical move.

When rafting, the crossing flow for the follow-on units is generally from a staging area, through the call-forward area and crossing site into an attack position, and then on to a subsequent objective. While bridging, the flow is from a staging area, through the crossing site, and then out of the crossing area.

Figure 3-7 illustrates the traffic flow for a follow-on battalion TF during the rafting. This procedure avoids congestion close to the crossing site and helps maintain unit integrity while the battalion rafts. The battalion occupies staging area Green 31 and organizes an internal unit crossing order based on its mission on the far shore. When concurrently swimming and rafting vehicles of the same battalion, the swimming vehicles form up separate from nonswimming vehicles for movement to the crossing sites and reform into a tactical formation at the far-shore attack position. ERP personnel at the call-forward area check to determine the correct load classification and proper loading sequence for each vehicle. When instructed by the CAC, the battalion sends one company at a time (or the equivalent) from the staging area. TCP personnel guide the company's movement en route to a call-forward area where it comes under the movement control of the CSC.

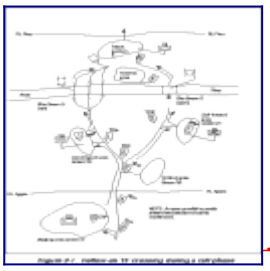

Figure 3-7. Follow-on TF crossing during a raft phase

n the call-forward area at site Green 33, ERP personnel organize individual vehicles into raft loads. They guide the raft loads down to the raft centerlines as directed by the CSC. In the call-forward area at site Green 21, vehicle crews make the final vehicle swimming preparations. ERP personnel send the vehicles down to the swimming site when directed by the CSC.

Vehicles remain under the control of the CSC until they are on the far shore. There they proceed to attack position 6, where they regroup as a company/team. When ready, the TF commander, under the tactical control of the brigade commander, controls the movement of the vehicles.

During bridging operations, the CAC normally directs the follow-on battalions to move in company serials from the staging area. Each serial moves down to the bridge site, crosses the river, and continues on to the attack position. The CAC directs an interval between serials that keeps continuous traffic across the bridge without gaps or traffic jams. A call-forward area remains established in the event that the bridge becomes damaged and units must be held until raft operations resume.

Units in the support-by-fire position on the near shore are already inside the crossing area when the crossing operation starts. They remain in this position until the CAC directs them to cross the river, and then they move directly to previously selected call-forward areas or start points (SPs) by company or platoon.

TRANSFER OF SUPPORT FORCES TO DIVISION

Once the bridgehead forces are across the river, the crossing sites are relatively secure. Since ground maneuver is no longer close to the crossing area, the operation at the river becomes predominantly a bridging and traffic-scheduling problem. The division headquarters moves the RL at the rear of the bridgehead force to the far shore. The crossing areas come under direct division control. As directed by the ADC, the brigade commander turns over his crossing area to another officer, normally the CAE, who becomes responsible for the crossing area. The CAE then reports through the CFE to the ADC at the DREAR. The CAE's unit headquarters becomes the crossing-area headquarters.

MOVEMENT CONTROL

Movement control is vital to efficiently move units and material up to the crossing area in the sequence needed by the commander. The traffic-control cells at the division and brigade headquarters exercise movement control through TCPs. The division controls movement from its rear boundary up to the brigade rear, and the brigade controls movement from the rear boundary up to the bridgehead line.

The division transportation officer (DTO) develops the division movement plan according to the movement priorities that the Assistant Chief of Staff, G3 (Operations and Plans) (G3) and the G4 establish. The S4 prepares the brigade movement plan according to the priorities that the Operations and Training Officer (US Army) (S3) establishes. Each unit-movement officer, normally the battalion S4, provides the unit's vehicle information to the planning headquarters.

The movement plan normally consists of a traffic-circulation overlay and a road-movement table found in the movement annex to the division's or brigade's order.

RETROGRADE CROSSINGS

A retrograde river crossing has most of the same control features as an offensive crossing. The commander responsible for a crossing area has the same authority as he does in an offensive crossing. When a brigade establishes a defense along the river concurrent with the crossing, the commander coordinates crossing activities to avoid conflicts with defensive preparations. For this reason, the responsible officer and his staff should be familiar with both the delaying and defending commanders' tactical plans. He coordinates optimum use of crossing sites by delaying forces. As the delaying forces disengage, they must rapidly pass through the defending force and cross the river. The commander responsible for the crossing area reports to the division CP controlling the operation. If the main CP is forward of the river, C2 is usually at the DREAR until the main CP displaces behind the river.When the river is in the division rear area at the start of the retrograde, the crossing begins as a rear operation. The senior corps engineer commander supporting the division becomes the CFE and establishes division crossing areas with corps engineer and MP units. He identifies engineer commanders, as directed by the commanding general, to quickly organize the crossing areas and initiate crossing control. These crossing areas correspond to the brigade boundaries planned by the G3 for the defense along the river.

Each brigade commander establishing a defense at the river appoints an XO to control the crossing area in his sector. When the river is in the brigade's sector at the start of the retrograde, this officer can

immediately take charge and organize the crossing area. If the division initially organizes the crossing area through the CFE, it directs the defending brigade to take charge of the crossing area once it has established its hasty defense at the river. Then the engineer who was responsible for the crossing area becomes the CAE. The brigade XO coordinates with the DMAIN, which retains centralized control of the crossing until only the defending brigade's units remain to cross in that area. The crossing area is used until the commander directs the bridges to be destroyed or removed. At that time, the crossing area ceases to exist.

Turnover of the sites from the CAC to the defending battalion commanders is by mutual agreement or when directed by the brigade commander. Simultaneous handoff between or within defensive sectors is not essential. Depending on the tactical situation, the division commander may not allow crossing equipment to remain in place, even though the defending brigade commander desires its retention. Normally, the CAC retains control of the crossing means until delaying forces cross the river. He then orders the removal of the tactical bridging assets. Control of the remaining fixed bridges then passes to the defending commanders. They are responsible for their defense and ultimate destruction, as discussed in *Chapter 6*.

LESSON 2
PRACTICE EXERCISE

Note: The following exercises are study aids. Print this sheet and write your answer in the space provided below each question. When you have finished answering all the questions for this lesson, compare your answers with those given by following the link at the bottom of this page. Review the lesson as necessary.

---

1. What are the three types of command posts (CPs) used by divisions and brigades?

2. Which CP prepares the division's river-crossing plan?

3. Who controls the movement of forces within the crossing area?

4. Given adequate time, what is the preferred means of communications in a river-crossing operation?

5. Which control measure delineates the crossing area?

6. List the five waiting areas used in a river-crossing operation.

7. Which waiting area can hold a company-size element and is located within the crossing area?

8. With which waiting area are engineer regulating points (ERPs) normally collocated?

ANSWER KEY AND FEEDBACK

1. What are the three types of command posts (CPs) used by divisions and brigades?
   Tactical, main, and rear CPs. See FM 90-13.

2. Which CP prepares the division's river-crossing plan?
   The division main CP (DMAIN). See FM 90-13.

3. Who controls the movement of forces within the crossing area?
   The crossing-area commander (CAC). See FM 90-13.

4. Given adequate time, what is the preferred means of communications in a river-crossing operation?
   Wire. See FM 90-13.

5. Which control measure delineates the crossing area?
   Release lines (RLs). See FM 90-13.

6. List the five waiting areas used in a river-crossing operation.

   Staging areas, call-forward areas, holding areas, attack positions, and assembly areas (AAs). See FM 90-13.

7. Which waiting area can hold a company-size element and is located within the crossing area?
   The call-forward area. See FM 90-13.

8. With which waiting area are engineer regulating points (ERPs) normally collocated?
   The call-forward area. See FM 90-13.

LESSON 3

PLANNING AND EXECUTION

OVERVIEW

LESSON DESCRIPTION:

This lesson addresses the planning and execution of river-crossing operations. First, it describes the planning processes for a river-crossing operation. Second, it describes the requirements for a division deliberate river-crossing operation. Finally, it describes the tactics and techniques used by a division to conduct a retrograde river-crossing operation.

TERMINAL LEARNING OBJECTIVE:

ACTION:	You will identify the planning requirements for a river-crossing operation, the phases of a deliberate river-crossing operation, and the types of retrograde river-crossing operations.
CONDITION:	You are given the material contained in this lesson.
STANDARD:	You will correctly answer all practice-exercise questions at the end of this lesson.
REFERENCES:	The material contained in this lesson was derived from FM 90-13.

INTRODUCTION

The planning and execution of a river-crossing operation is different from all other operations a unit will conduct. In planning the operation, an engineer commander and staff must take special considerations into account. They must use special procedures in the execution during either a deliberate or a retrograde crossing. Chapters 4, 5, and 6 of FM 90-13 provide the details for planning and executing river-crossing operations (see FM 90-13).

This lesson described the planning and execution of river-crossing operations. Specifically, it outlined the—

- Steps in planning a river-crossing operation.
- Requirements for a division deliberate river-crossing operation.
- Tactics and techniques for a division retrograde river-crossing operation.

PLANNING

GENERAL

Units plan river crossings the same as any tactical operation, with one major difference. Force allocation against enemy units has an added dimension of time. Friendly forces can only arrive on the battlefield at the rate at which they can be brought across the river. This rate changes at different times throughout the operation. This chapter outlines the detailed planning necessary because of this difference.

The corps allocates support elements to the division and provides terrain and enemy analyses. It assigns mission objectives to the division. For operations where the corps is crossing the river, it may assign the bridgehead line.

The division assigns mission objectives to the brigades and specifies the bridgehead line. It may assign bridgehead objectives to the brigades. The division allocates maneuver and maneuver-support forces to the brigades and develops coordination measures, such as movement schedules, that apply to more than one brigade. The division also provides terrain and enemy analyses to the brigades.

The senior corps engineer headquarters, allocated to the division for the crossing, assists the division engineer section with detailed crossing plans. The lead brigade develops the tactical plans that it will execute. It develops the crossing objectives in order to attain its mission objective.

The headquarters of the corps engineer battalion, assigned to support each brigade crossing, develops the detailed crossing plan. The battalions develop the tactical plan necessary to seize assigned objectives.

The actual planning process for a river crossing is the same as for any tactical operation. Differences occur primarily because of the complexity of crossing a river (which makes extensive calculation necessary) and the need to balance tactics with crossing rates.

Planners do crossing calculations twice. Crossing calculations are critical to COA evaluation. They are required to ensure that force buildup supports the COA. For initial planning, simple calculations and rules of thumb are used to produce quick force-buildup information. Once a commander selects a specific COA, planners make detailed crossing calculations to produce the crossing plan.

THE PLANNING PROCESS

The staff planning process produces a best possible solution to accomplish the unit's mission. This chapter discusses those parts of planning that are necessary for a river crossing. It does not attempt to discuss the larger planning process necessary for full mission accomplishment.

In the following paragraphs, the planning process is described in steps and by echelons. The shadowed text in the tables shows the step in the planning process being discussed, with the battle staff and engineer planning requirements alongside. A detailed discussion that is primarily aimed at the division and brigade echelons follows. In general, the corps identifies the crossing requirement and provides

assets, the division conducts a detailed terrain analysis and develops rough crossing plans, and the brigade develops detailed crossing plans.

ANALYZING THE MISSION

The first step is to recognize that a river crossing is necessary (see *Table 4-1*). Once the mission is received, the staff develops and conducts a mission analysis. This is done to-

- Understand the purpose of the mission and the intent of the commander and the commander two levels up.
- Review the area of operations.
- Identify tasks (both specified and implied), assets available, constraints, restraints, and an acceptable level of risk

Table 4-1. Step 2 - analyze the mission

Military Decision-Making Process	Actions to be Taken
Receive the mission	The battle staff- • Identifies critical facts and assumptions. • Conducts an initial IPB by- - Identifying key terrain affecting the crossing. - Templating enemy river defenses. - Estimating the crossing capability of the area to be crossed, using terrain data and available crossing means. - Calculating force crossing rates for each crossing area, using the troop list. - Templating enemy obstacle systems. - Reviewing available bridging assets. • Determines specified, implied, and essential tasks. • Recognizes that a river-crossing operation is necessary. • Issues a WO. • Determines the CCIR as pertaining to the river crossing.
Analyze the mission	
Develop COAs	
Analyze COAs	
Compare COAs	
Approve a COA	
Produce orders	

A mission analysis is conducted according to *FM 101-5*. Corps planners normally identify river-crossing requirements when assigning missions to the division. The corps plan will then provide river-crossing assets to the division and may specify crossing the river as one of the tasks assigned to the division. If the mission the corps is assigning does not require a division-level river crossing, it may not specify a crossing. The troop list includes necessary crossing assets, however.

Normally, if the corps identifies the requirement for a river crossing, its warning order (WO) includes it. The topographic company supporting the corps provides detailed river data and crossing-area overlays. The topographic company automatically provides necessary topographic data to the division terrain team. See *FM 100-15* for more details on planning at the corps level.

The division discovers that it must cross a river by receiving a specified task in the corps's order or by developing an implied task during mission analysis. The division engineer's section always examines all rivers in the division's area of operations during the mission-analysis process. The division terrain team maintains a terrain database that includes river data and potential crossing sites for the division's area of operation.

NOTE: Upon identifying a river- crossing task, the division engineer and terrain team immediately determine potential crossing sites.

INTELLIGENCE PREPARATION OF THE BATTLEFIELD

The battle staff, including the staff engineer's help, analyze the existing situation. This analysis includes the enemy, friendly troops, terrain, and time available for the mission. This step is primarily designed to acquire the data necessary for the following planning steps, but some early analysis is necessary to generate critical information. The engineer staff officer must very quickly convert raw terrain data and friendly information into crossing rates. This allows the planners to make intelligent decisions about supportable schemes of maneuver.

As a part of the IPB process, the G2 leads the staff development of a defensive situational template along the entire river that the division must cross. The template focuses attention on possible areas of weakness, counterattack forces, and artillery.

The G2, with the division engineer's help, develops obstacle templates from the line of contact through to division objectives. He provides the templates to the brigade intelligence sections for their planning and analysis. The division engineer provides enemy obstacle information (particularly along the river) to the brigade engineers.

The division provides the brigade staff with templates that it refines and further develops for the enemy force in its area of operation. The S2 develops intelligence requirements and a detailed intelligence-collection plan, with specific emphasis on the far shore. Reconnaissance teams seek information to fill those requirements. Obstacle templates are verified by active air and ground reconnaissance, as directed in *Chapter 2*.

FRIENDLY TROOPS

The division engineer coordinates for corps engineer units to cross the force, using the simple rule of thumb that every forward brigade requires two bridges. Insufficient bridging assets limit possible COAs.

The brigade engineer identifies the crossing sites required for the brigade and for each battalion based on the number of vehicles. This calculation is based on simple assumptions. From it, the brigade engineer determines the approximate time necessary to cross the entire brigade (see *Appendix B*). The

crossings required are important during COA development. The brigade engineer also determines the amount of bridging available, the number of possible heavy rafts, and the number of assault boats. This information is forwarded to the CAE, who is responsible for the control of all crossing means.

TERRAIN

The division engineer ensures that adequate information is in the crossing-site database for planning at brigade level. The division terrain team generates crossing-site overlays, site data files, and road and cross-country-movement overlays for the crossing areas.

The division engineer ensures that sufficient assault, raft, and bridge sites are available within each assault-brigade area. Generally, a main attack brigade requires assault sites for two dismounted battalions and at least two raft or bridge sites.

The brigade engineer, coordinating with the CAE, evaluates all potential crossing sites from both technical and tactical considerations, including-

- Entry- and exit-road networks.
- Cross-country movement.
- The width, velocity, and depth of the river.
- The conditions of the bank.
- The vegetation along the shore.
- The obstacles in or along the river.
- Possible attack positions and routes to the river.
- Possible call-forward areas.

The brigade engineer, coordinating with the CAE, then analyzes each site to arrive at a rough crossing-rate capability and the effort necessary to open the site. Operational planners use this information to develop possible COAs.

The division engineer, coordinating with the CFC, ensures that the crossing requirements of the lead brigades and breakout force are adequately resourced to satisfy each COA.

The BMAIN evaluates the terrain along the river in terms of OCOKA. The intent is to understand the terrain along the river so that potential COAs can be devised with crossing objectives. The operations planners combine this knowledge with the crossing-site comparisons and enemy templates to develop possible COAs.

DEVELOPING COAs

The G3, along with key members of the battle staff, sketches out possible COAs to accomplish the mission of the division (see *Table 4-2*). COAs must include-

- Assigned crossing areas for each brigade.
- Brigade boundaries that include terrain which is necessary to defend the bridgehead against enemy counterattacks.

Table 4-2. Step 3 - develop COAs

Military Decision-Making Process	Actions to be Taken
Receive the mission	The battle staff- • Sketches out, with the commander's assistance, several COAs to develop. • Develops the scheme of maneuver, fire plan, and support plan for each COA, considering crossing capability and the order of crossing. The engineer selects sites, determines rafting and bridging configurations and bank-preparation requirements, and task-organizes the engineers for each COA.
Analyze the mission	
Develop COAs	
Analyze COAs	
Compare COAs	
Approve a COA	
Produce orders	

Looking two levels down, the division staff plans an assault-crossing site for each anticipated assault battalion in a brigade's area. A brigade should also have two bridging or rafting sites within its boundaries.

The S3 looks closely at the avenues leading to brigade mission objectives, particularly at crossing sites feeding the avenues. Developing practicable COAs is normally an iterative process. The division staff first develops a scheme of maneuver to take the final objective, then verifies that the force build-up rate across the river is adequate for the scheme of maneuver. If so, the S3 expands the COAs to include the tactics required for the crossing.

The tactics required for the crossing are based on enemy defenses near the crossing sites, enemy reaction forces and earliest employment times, and crossing rates at each site. The COAs must include exit-bank, intermediate, and bridgehead objectives.

The S3, working with the brigade engineer and CAE, develops the control measures, crossing graphics, and crossing time line for each COA (see *Figure 4-1*)

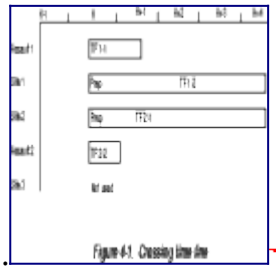

Figure 4-1. Crossing time line

ANALYZING COAs

The staff at both the division and brigade war-game each COA against likely enemy reactions (see *Table 4-3*). They then attempt to counter each enemy response.

Table 4-3. Step 4 - analyze COAs

Military Decision-Making Process	Actions to be Taken
Receive the mission	The battle staff war-games each COA against possible enemy responses. The engineer war-games each COA against terrain changes and equipment loss.
Analyze the mission	
Develop COAs	
Analyze COAs	
Compare COAs	
Approve a COA	
Produce orders	

The engineer-

- War-games against other variables outside his control, such as terrain difficulties and crossing-equipment losses.
- Considers what will happen-

  - If it takes longer to open a crossing site.
  - If damage slows progress over entrance and exit routes.
  - If the conditions of the river change.
- Considers what will happen if enemy action shuts down a crossing site or forces its relocation.
- Must consider the consequences of equipment failure or loss to enemy action.
- Evaluates the most likely of these against all COAs and develops, within his means, necessary counters to include alternate sites and routes.

COMPARING COAs

The division staff examines each COA against both the immediate and follow-on missions (see *Table 4-4)*. The division is particularly concerned with the movement of reserve and support forces and compares COAs against these requirements.

Table 4-4. Step 5 - compare COAs

Military Decision-Making Process	Actions to be Taken
Receive the mission	The battle staff- • Compares and evaluates the advantages and disadvantages of the COAs. • Recommends one COA to the commander. The commander selects a COA and issues a FRAGO.
Analyze the mission	
Develop COAs	
Analyze COAs	
Compare COAs	
Approve a COA	
Produce orders	

The brigade staff considers the ability of each COA to handle enemy responses, support follow-on missions, provide brigade flexibility, and allow for crossing redundancy.

PRODUCING ORDERS

The battle staff converts the selected COA into a plan with sufficient detail for synchronized execution (see *Table 4-5*). The staff engineer conducts an extensive analysis to develop a unit-by-unit crossing plan and movement schedule in conjunction with the G3, G4, and DTO. From this analysis, he develops the crossing-capability chart (see *Appendix B*) and the crossing overlay (see *Figure 3-6, Chapter 3)*. These are his primary execution tools. The staff engineer develops the crossing-synchronization matrix as a primary execution tool for the S3 (see *Appendix B*). He also helps the traffic-control cell work out the traffic-circulation plan.

Table 4-5. Step 6 - produce orders

Military Decision-Making Process	Actions to be Taken
Receive the mission	The battle staff converts the selected COA into an executable plan. The engineer develops a detailed crossing plan.
Analyze the mission	
Develop COAs	
Analyze COAs	
Compare COAs	
Approve a COA	
Produce orders	

While detailed planning is underway, the CAE initiates far-shore and nearshore reconnaissance to develop sufficient detail for battalion-level planning. He converts this planning into a detailed engineer task list and develops an engineer execution matrix to synchronize it (see *Appendix B*).

DIVISION DELIBERATE RIVER CROSSING

GENERAL

A division deliberate river crossing is an operation conducted as part of an offensive operation. The intent of a deliberate river crossing is to quickly cross a river and rapidly secure the bridgehead line. It is meticulously planned and coordinated with all concerned elements. A deliberate river crossing requires thorough reconnaissance and extensive evaluation of all intelligence. It requires detailed planning and preparation, centralized control, and extensive rehearsals. A deliberate river crossing is costly in terms of manpower, equipment, and time. It is generally conducted against a well-organized defense when a hasty river crossing is not possible or when one has failed. A deliberate river crossing requires the concentration of combat power on a narrow front, capitalizing on the element of surprise. The phases, echelons, organizations, and C2 of a division deliberate river crossing are discussed in detail in this chapter.

PHASES OF A DELIBERATE RIVER CROSSING

An offensive deliberate river-crossing operation has four phases. They are distinct phases for planning, but there is no pause between them in execution. The phases are as follows:

- *Advance to the river (Phase I)*. The first phase is the attack to seize the nearshore objective.
- *Assault across the river (Phase II)*. The second phase involves units assaulting across the river to seize the far-shore objective, eliminating direct fire on the crossing sites.
- *Advance from the exit bank (Phase III)*. The third phase is the attack to secure exit-bank and intermediate objectives that eliminate direct and observed indirect fires into the crossing area.
- *Secure the bridgehead line (Phase IV)*. The final phase involves units that secure bridgehead objectives to protect the bridgehead against a counterattack. This gains additional time and space for the buildup of forces for the attack out of the bridgehead.

These phases are followed immediately by an attack out of the bridgehead by follow-on forces to defeat enemy forces at subsequent or final objectives. *Figure 5-1* relates the crossing phases to the objectives described in this chapter.

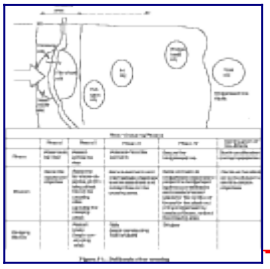

Figure 5-1. Deliberate river crossing

THE RIVER CROSSING

The following section describes a deliberate river-crossing operation from the division's and brigade's perspectives. It details the actions that are required in deep, close, and rear operations by phase (see *Figure 5-2*).

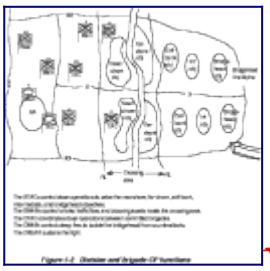

Figure 5-2. Division and brigade CP functions

A division is normally the smallest organization that can conduct a deliberate river-crossing operation. It is usually an implied task in a larger mission given by the corps. The river crossing is not the objective but is part of the scheme of maneuver and overall offensive action against the enemy. The enemy will normally use the river as a tactical obstacle system to slow and gain positional advantage against the division's advance. The intent of the division is to maintain its momentum through the crossing.

Mission, enemy, terrain, troops, and time available (METT-T) dictate the force allocation required during each phase of the operation. Aside from the normal planning, detailed march tables are required for the rapid passage of units through the crossing area into the bridgehead. Detailed plans are disseminated before the execution to ensure an uninterrupted operation. River-crossing operations normally restrict movement to four to six routes. This requires disciplined and controlled movement to ensure that combat power builds in the bridgehead faster than the enemy's ability to react.

An integral part of the river-crossing operation is the deception plan. The corps will plan, resource, and control all of the requirements to execute a believable deception so that the enemy does not know where the division will conduct the deliberate river-crossing operation.

To conduct the deliberate river crossing, the division requires augmentation from the corps. The corps must provide bridge companies that are in direct support to the division for the river-crossing operation in addition to other combat engineers that are required to operate assault boats, provide C2, and so forth. An assault float bridge (AFB) company must have an engineer group or ad hoc battalion staff that can support the deliberate river-crossing operation and can remain in place after the division continues the attack to subsequent corps objectives. Engineer groups should include one corps combat engineer battalion and two AFB companies for each lead brigade. The corps normally provides a corps engineer light diving team to-

- Conduct nearshore and far-shore reconnaissance.
- Perform bottom-composition surveys.
- Neutralize underwater obstacles.
- Construct underwater bridge structures, obstacles, and floating barriers.
- Perform in-water repair to bridges and watercraft.
- Recover sunken equipment.

- Search for and recover casualties. Additionally, the corps normally provides a corps MP company to assist the division in regulating the traffic and conducting route security in the crossing area. The corps also allocates additional smoke units to assist the division chemical company in obscuring the river-crossing area. Finally, the corps will provide short-range air-defense (SHORAD) and high-to-medium air-defense altitude (HIMAD) air-defense artillery (ADA) support to protect the bridgehead from air interdiction.

ADVANCE TO THE RIVER (PHASE I)

Once the division has planned the operation, the first phase is initiated (see *Chapter 4*). The division will attack to seize nearshore terrain that includes favorable crossing sites and road networks. Normally, the division advances with two brigades abreast and a reserve brigade trailing. The cavalry squadron can provide a forward or flank screen (see *Figure 5-3*). The DTAC controls the efforts of the lead brigades (see *FM 71-100*).

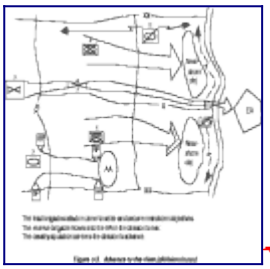

Figure 5-3. Advance to the river (division focus)

Well before the division reaches the river, the cavalry squadron moves ahead of the main body to conduct a reconnaissance of the near shore and predetermined crossing sites. Engineer reconnaissance teams may need to be allocated to the division cavalry squadron to assist in the reconnaissance of crossing sites. If the tactical situation prohibits the cavalry squadron from moving to reconnoiter the crossing sites, one or both of the lead brigades must conduct the reconnaissance. As the division arrives at the river, the lead brigades establish security on the near shore. The lead brigades develop hasty defensive positions to protect the crossing area and cover the crossing sites with direct and indirect fires.

During the advance to the river, the DMAIN coordinates counterfires, close air support (CAS), and support of the division aviation brigade against deep targets. By effectively using these assets, the DMAIN fights the deep battle and isolates the bridgehead.

The DREAR sustains the division's advance. It ensures that key classes of supplies are pre-positioned forward. Priority is shifted to the maintenance of the bridging assets and those of the units supporting the crossing area.

The BTAC controls the fight of the TFs within its brigade. The brigade travels in a formation that is METT-T driven. The brigade seizes objectives that secure the near shore (see *Figure 5-4*)

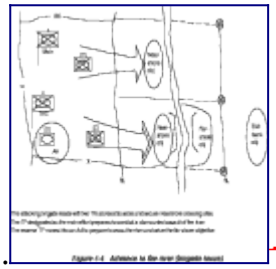

Figure 5-4. Advance to the river (brigade focus)

Each BMAIN is the crossing-area headquarters. The crossing area is bounded by RLs on the friendly and enemy sides of the river. The RL on the friendly side is usually set 2 to 3 kilometers from the exit bank, out of the range of enemy direct-fire weapons. The RL on the enemy side delineates an area large enough for forces to occupy battalion-sized attack positions. The BMAIN is responsible for controlling units that provide the crossing means, traffic management, and obscuration. Normally, corps assets are task-organized by the division in direct support of the forward brigades to perform these functions. The BMAIN controls these assets. Once the brigade has secured the near shore, MP and engineers mark routes from the staging area to the crossing sites; lay out staging, holding, and call-forward areas; and set up ERPs and TCPs.

Once the near shore is secured, the DTAC becomes the crossing-force headquarters responsible for coordinating the close operations of the committed brigades within the bridgehead and crossing area. The bridgehead is the area on the far shore that is required to provide space and time for the buildup of combat power to continue offensive combat operations. The crossing area is the area, bounded on either side of the river by RLs, in which units move on predetermined routes and use the time tables that are specified in the division's order.

The DTAC coordinates the efforts of the lead brigades as they prepare to assault across the river.

ASSAULT ACROSS THE RIVER

(PHASE II) The DMAIN continues to control deep-fire assets to isolate the bridgehead. As units advance, deep fires shift to subsequent targets. The division coordinates with the corps for SHORAD and HIMAD coverage to protect the bridgehead from enemy air interdiction. The corps normally provides Patriot and Hawk support. The division AD battalion provides local AD coverage. The river creates lucrative targets at relatively fixed locations that are easily targeted by enemy air. Therefore, approaches; holding, staging, and call-forward areas; and crossing sites along the river are the highest priority for AD during the crossing. AD units occupy positions to engage aircraft with massed fires before the aircraft can reach weapons release points (RPs).

The DTAC coordinates the actions of the brigades conducting the assault across the river (see *Figure 5-5*). The crossing sites are chosen because of available concealment, a good route system, and sufficient space for AAs on the near shore. These sites also have defensible terrain on the far shore of the river to provide a secure base for continuing the operation.

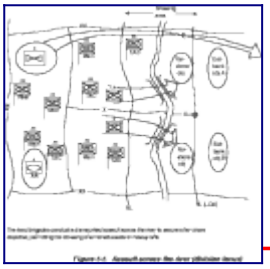

Figure 5-5. Assault across the river (division focus)

The DREAR begins to push packages of Class IV and V supplies to support the hasty defense to secure the bridgehead line.

The BTACs control their own respective assault-crossing elements, which normally consist of dismounted infantry. A corps combat engineer company, operating assault boats (RB15s) from the corps bridge companies, transports the dismounted soldiers of the assault force to the far shore. The dismounted element crosses the river and secures terrain for the reinforcing armored vehicles. The assault across the river can also be an air-assault operation. The dismounted assault forces are supported by the tanks and infantry fighting vehicles from their TF and by other combat units in support-by-fire positions. Heavy rafts are prepared to transport tanks and infantry fighting vehicles to the far shore for reinforcing the dismounted infantry. M9 ACEs/dozers are transported to prepare the far-shore exit sites. Rapid reinforcement of dismounted assault forces with armored vehicles may be so critical, based on the METT-T, that it justifies using any expedient method to get the first few armored vehicles across. This includes winching, towing, or pushing the first ones across normally unsuitable places while engineers improve entry and exit points for the rest.

Each BMAIN controls smoke to obscure crossing sites on the river. When employed, the smoke blanket covers several kilometers of the river and river approaches to conceal the actual crossing locations, but not as to obscure the bridge crewmens' vision. The crossing-area headquarters uses smoke generators, smoke pots, and smoke munitions from the division and corps. The BMAIN controls the use of MP and corps engineer units to establish nearshore waiting areas, mark routes to the crossing sites, and begin constructing heavy rafts and/or bridges.

The intent of this phase is to rapidly place combat power on the far shore to eliminate the enemy's direct fire onto the crossing sites and secure terrain for attack positions. Brigades normally establish limits of advance (LOAs) and fire-support coordination lines (FSCLs) for the dismounted TFs conducting the assault. These lines establish an LOA that encompasses the far-shore objective. Enemy indirect fire into the crossing area will probably continue; however, each crossing site within the crossing area must be isolated from direct fire to enable the construction and operation of rafts. These rafts will then be used to transport armored vehicles for rapid reinforcement of the dismounted infantry TF. Within the crossing area, secured attack positions allow units to form into combat formations before continuing the attack.

Commanders may consider immediate construction of a bridge during this phase without ever conducting rafting operations. The advantage is that combat power can be massed on the far shore at a much faster rate. The risk that the commander takes in making this decision is that a large amount of bridging assets is exposed to enemy fire before the elimination of enemy indirect fires on the crossing area.

ADVANCE FROM THE EXIT BANK

(PHASE III) The division continues its attempt to secure the bridgehead line by attacking to seize and secure exit-bank and intermediate objectives. The intent is to eliminate direct and observed indirect fires from the crossing area (see *Figure 5-6*)

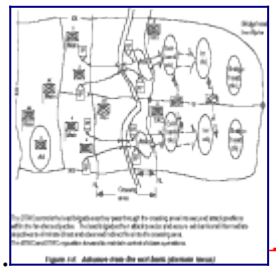

Figure 5-6. Advance from the exit bank (division focus)

The division commander selects exit-bank and intermediate objectives based on METT-T. The river splits the attacking force, limiting massed direct fires beyond the exit bank. Therefore, these objectives are usually smaller and not as far from the attack positions as the objectives used in other offensive operations.

Once the exit banks are secured, the division cavalry squadron crosses either by swimming or rafting their cavalry fighting vehicles. They then conduct normal screening operations for the division as the armored reinforcements are crossing the river and preparing to advance from the exit bank.

The DTAC controls the coordinated attack of the lead brigades and the cavalry squadron to seize exit-bank and intermediate objectives. The DMAIN controls deep fires that aviation, artillery, and CAS provide to block enemy counterattacks into the bridgehead as requested by the DTAC.

The DREAR prepares to push packages of Class III and V supplies that will support the attack out of the bridgehead. They also begin to push Class IV and V supplies for the hasty defense during the last phase of the river-crossing operation.

The BMAINs control the movement of their follow-on TFs from the staging areas across the river to their attack positions on the far shore. They control the upgrade of crossing sites from assaults boats (RB15s) to heavy rafts and/or bridging to ensure that the force buildup can support the advance from the exit bank to intermediate objectives. MP and, if available, corps combat engineers assist in movement control through the crossing area.

During this phase, limited two-way traffic begins to return disabled equipment and casualties.

The BTAC controls the movement out of the attack positions to exit-bank and intermediate objectives. Exit-bank objectives are those positions that, when seized, eliminate the enemy's ability to use direct-fire weapons on the crossing area. Intermediate objectives are those positions from which the enemy can provide observation for indirect-fire weapons. This enables the expansion of SHORAD coverage, allowing more time to engage aircraft in air avenues of approach on the far shore (see *Figure 5-7*).

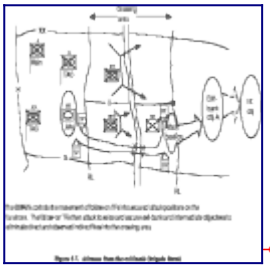

Figure 5-7. Advance from the exit bank (brigade focus)

The TF that conducted the dismounted assault across the river continues to cross armored vehicles and remount their dismounted soldiers in preparation for continued offensive operations.

The brigade commanders establish the order of raft loads based on the division's crossing priorities. Bridge companies run heavy raft sites and begin to construct ribbon bridges. MP mark routes and control holding areas on the far shore to ensure rapid transit within the crossing area.

SECURE THE BRIDGEHEAD LINE

(PHASE IV) The bridgehead must be defendable and large enough to accommodate forces that will break out to continue offensive combat operations. The lead brigades attack to secure the final objectives within the bridgehead to prevent the enemy from successfully counterattacking against forces within the bridgehead line by rapidly building enough combat power to establish a hasty defense in the sector. The cavalry squadron conducts a screen mission. The lead brigades maintain continuous far-shore security to prevent bypassed enemy elements from infiltrating back to the river and disrupting activities at the crossing sites (see *Figure 5-8*).

Figure 5-8. Secure the bridgehead line (division focus)

The DTAC controls the lead brigades and the cavalry squadron as they secure the bridgehead objectives (see *Figure 5-8*) and prepare to move the reserve brigade or other corps forces (breakout forces) into attack positions within the bridgehead. Once the bridgehead objectives are secured, the lead brigades establish a hasty defense in sector.

The DREAR begins to push forward Class III and V supplies that are needed for the attack out of the bridgehead.

The BMAIN continues to upgrade and monitor the crossing sites and control the movement of forces through the crossing area. The far-bank RL, defining the crossing area, is moved just past the intermediate objectives (see *Figure 5-8*) to provide space for the breakout forces. Once the bridgehead line is secure, the DTAC controls the movement of the breakout forces through the crossing area to attack positions within the bridgehead. During this phase, specific bridges and/or rafts are designed for full-time return traffic. This ensures that resupply and the evacuation of wounded soldiers and disabled equipment occur.

The DMAIN controls the aviation, artillery, and available CAS sorties to screen the flanks and interdict enemy counterattacks. Deep operations play a key role in the bridgehead defense by targeting enemy formations as they move to counterattack. They also eliminate effective artillery fire within range of the bridgehead and destroy other enemy artillery forces moving up to the fight.

The lead brigade elements that secure the bridgehead line must control the avenues of approach into the bridgehead and be large enough to defeat counterattacks. After the bridgehead is secure, the division commander commits the breakout force to attack position within the bridgehead. The bridgehead needs enough space (20 to 30 kilometers deep) to accommodate both the lead brigades and the breakout force with their combat service support (CSS). The bridgehead line must also be deep enough to employ AD systems against hostile aircraft before they reach weapons RPs to attack crossing sites.

CONTINUATION OF THE ATTACK

Once the division has secured the bridgehead, the division river crossing is complete. Crossing-area control will be passed to the DREAR and ultimately to the corps. The breakout force must complete its passage before continuation of offensive operations. The lead brigades must reorganize and prepare to follow the breakout force as the division or corps reserve. Security forces from the corps must come forward to relieve the lead brigades from their bridgehead security mission.

As the breakout force crosses into attack positions, the DTAC begins to focus on the attack out of the bridgehead. Therefore, the DREAR assumes the role of the crossing-force headquarters. This allows the DTAC to focus completely on the attack out of the bridgehead, which is usually led by the division cavalry squadron.

The DREAR controls the breakout force's movement through the crossing area to the attack positions and two-way traffic facilitating the return of wounded soldiers and disabled equipment. The corps must provide other forces for bridgehead security before the lead brigades reorganize to resume their mission as the division reserve.

RETROGRADE OPERATIONS

GENERAL

The goal of a retrograde river-crossing operation is to cross a river while preserving the integrity of the force. A retrograde operation is an organized movement to the rear or away from the enemy.

This chapter describes only those tactics and techniques used by a division in a retrograde river-crossing operation that are different from those used in an offensive crossing. A retrograde crossing features centralized control at division level. Detailed planning and preparation of engineer assets are a critical consideration within the time available. A retrograde crossing differs from an offensive crossing in several aspects:

- Both banks of the river initially are under friendly control. Accordingly, detailed information concerning the river and the area over which the retrograde is conducted should be readily available to the commander.
- All existing bridges and other crossing sites are available to the retrograde force to expedite the crossing.
- Relative combat power favors the enemy in most cases. Units conducting retrograde operations then must retain a mobility advantage over the enemy.

Deception is always planned and executed to deceive the enemy and to protect the force during a retrograde operation. As a minimum, these plans seek to conceal the extent of the operation and the actual crossing sites. Smoke, electronic deception, and dummy sites reduce the enemy's capability to disrupt the crossing.

The same control measures are used in retrograde operations as in offensive operations. *Figure 6-1* shows an example. See *Chapter 3* for a discussion of each control measure and a C2 diagram.

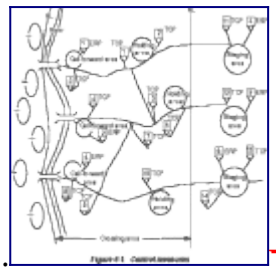

Figure 6-1. Control measures

RETROGRADE TYPES

A retrograde operation may be forced by enemy action or by a higher headquarters. A well-planned, well-organized, and ag-gressively executed retrograde operation provides opportunities for the division to inflict heavy damage on enemy troops and equipment while continuing to maintain its fighting integrity. The three types of retrograde operations are delay, withdrawal, and retirement.

DELAY

Units conduct delays when their strength is insufficient to attack or defend or when they want to maneuver the enemy into an area for a subsequent counterattack. A delay is an operation in which the unit, under enemy pressure, trades space for time by inflicting maximum damage on the enemy without being decisively engaged in combat. Flexible planning allows the units conducting a river crossing to adapt quickly to changes during execution. Some important features of a flexible plan include-

- Multiple approach routes from battle positions to crossing sites.
- Lateral routes between crossing sites.
- Alternate crossing sites if enemy actions close primary sites.
- Crossing equipment held in reserve to replace losses or open alternate sites.
- Preplanned engagement areas (EAs) to block enemy advances.

A delay combined with a retrograde river crossing has the following phases:

- Delay.
- Crossing.
- Defense.

Each phase is separate only in planning; they overlap during execution. Employing military crossing equipment in the retrograde is the reverse of the method used in a deliberate, offensive river-crossing operation. *Figure 6-2* relates the retrograde sequence to the crossing stages.

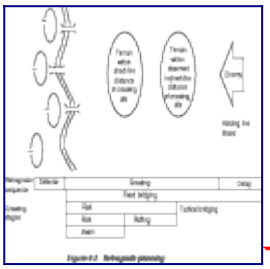

Figure 6-2. Retrograde planning

DELAY PHASE

The delay phase provides security for the main body and allows the delaying force to gain enough time for the main body to accomplish its mission (cross the river). For this reason, delaying forces take some risk. The delaying force must deceive the enemy and keep it from the river, allowing the main body to cross and establish the exit-bank defense.

The division commander establishes a holding line on defensible terrain between the river and the enemy. Its location precludes direct and observed indirect fires in the crossing area.

Forces not assigned tasks in the delay, including those forces with a mission to support crossing areas or establish the defense on the exit bank, execute a planned retirement or withdrawal and cross the river as rapidly as possible. To preclude early enemy detection of the retrograde, the forces follow a movement-control plan that supports the deception plan.

The delay phase continues until the battle is within communications and fire-support range of the exit-bank defense. The delaying force must be strong enough to hold the enemy until other forces establish

the defense. The defending force assumes responsibility for the battle as the delaying force completes a rearward passage of lines through the defending force.

Figure 6-3 shows an example of a retrograde crossing. In this case, the 3rd brigade is the delaying force. It occupies battle positions to the rear of the 1st and 2nd brigades at RL Plum, the initial-delay position (IDP), to help them withdraw. The 3rd brigade delays the enemy forward of the holding line until the rest of the division crosses the river and the 1st and 2nd brigades reestablish the defense along the river.

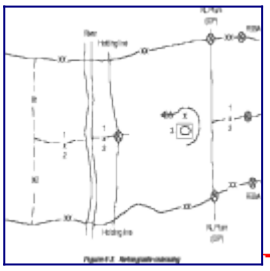

Figure 6-3. Retrograde crossing

CROSSING PHASE

In contrast to normal offensive crossing operations, friendly forces initially control retrograde crossing sites, which may be insufficient in number. The enemy usually knows where the logical crossing sites are and attacks them early in the operation, but it must not be allowed to capture them. Friendly forces should develop additional sites to provide flexibility against this possibility.

The commander should attempt to salvage tactical bridges and rafts for future use; however, it may be necessary to use them for the crossing and then destroy them to prevent capture. Fixed bridging must be prepared for destruction and also be protected against ground and air attacks. This requires close coordination with the delaying force to preclude cutting off friendly forces or allowing enemy seizure of sites intact.

The BMAIN, commanded by the brigade XO (CAC), is responsible for the passage of all units through the crossing area.

Traffic control up to and through the crossing area is a critical problem in crossing operations. For this reason, plans for movement must be detailed, and movement control is essential. This control is exercised by the CAC with assistance from the delaying-force commander (brigade commander). The CAC controls all movement within the crossing area to include retrograde forces.

It is the responsibility of the CAC to ensure the continuous and orderly flow of the retrograde elements across the river. His control includes both the ERPs, which ensure that all vehicles are of the proper class and size, and also all waiting areas that feed vehicles through the crossing area. To assist the CAC, MP and, if available, engineers establish and operate TCPs to manage the traffic flow. CSCs oversee the crossing means. The CAC and his staff must synchronize the crossing plan with the commander's tactical plan.

Activity within the crossing area begins with two-way crossings by CSS units evacuating nonessential supplies or restocking the delaying force. During the early stages of the retrograde, the existing

crossing means may be supplemented by tactical bridging. As a minimum, additional tactical bridging assets must be planned and available.

Initially, the force crosses on fixed and floating bridges. It crosses on bridges as long as possible, since this is the most rapid means. Once the bridges become vulnerable to capture, air attack, or observed indirect fires, they may be converted to rafts or removed. Vehicles continue to cross by using rafts or by swimming. The crossings are made under the suppressive fires of the defending force's direct- and indirect-fire weapons.

The forces cross the river in an orderly flow while conserving combat power. The retrograde crossing begins as a rear-area operation for the division. Initially, it is a traffic-scheduling problem, centrally controlled by the division. The division establishes crossing areas before crossing maneuver brigades. Crossing-area operations are the same as for offensive crossings (see *Chapter 5*). Even when the division has to establish the crossing areas quickly, under adverse circumstances, it synchronizes crossing-support activities with those of the defense force that is preparing to close the routes in the crossing areas.

Crossing sites need the highest priority for AD. This is particularly critical when the enemy has air superiority or when air parity exists. The sequence for crossing AD units should account for the need to provide continuous coverage of crossing sites.

The division engineers are fully committed to the delay. As a result, engineers under the control of the CAE run the crossing sites and support initial preparation of exit-bank defenses. Engineers focus on enemy engineer breaching assets and the interdiction capabilities needed to support enemy maneuver.

DEFENSE PHASE

The defense phase stops the enemy by keeping it out of the crossing area, denying it crossing sites upstream or downstream, and destroying its attempts to cross the river. In particular, the defense phase targets potential enemy crossing assets. Whether continuing the retrograde further or defending along the river, the division establishes a strong exit-bank defense. The defending force protects the delaying force as it crosses the river after battle handover. The rearward passage of lines by the delaying force is a normal defensive operation, complicated by the river.

Initially, the defending force is small. It consists of combat and combat-support units not involved in the delay as well as augmentation from corps reserves. Because enough forces are not available to defend all points along the river, the defense depends on rapid lateral movement to concentrate at vulnerable points. In particular, it orients on and protects the crossing sites against the enemy's forward detachments and heliborne forces.

After battle handover from the delaying force, the defending force is responsible for the area between the holding line and defensive positions on the exit bank. The defending force masses fires to help its elements in contact forward of the river to withdraw, thereby complicating the retrograde crossing.

The defending force accepts battle hand-over from the last of the delaying force at the holding line and covers its crossing over a fixed bridge that is prepared for demolition. Friendly forces at the river

prevent the enemy from crossing at the site of a demolished fixed bridge so that companies securing the crossing site can safely withdraw in turn.

WITHDRAWAL

A withdrawal differs from a delay in that it is an operation in which the unit in contact disengages from an enemy force and moves to the rear. Withdrawals are executed when the commander desires to withdraw to control future tactical operations without being forced to do so by enemy pressure. A withdrawal follows the same sequence as a delay. The only difference is that the unit may or may not be in enemy contact.

During a withdrawal, the enemy usually does not pressure withdrawing units. Also, other friendly units do not normally assist in withdrawals. Care must be taken to ensure that the enemy does not try to isolate and encircle units during river-crossing operations. If a unit has difficulty breaking with the enemy in a withdrawal, it can request help from a higher level. The assisted withdrawal will be a rearward passage of lines. Exchange of information on obstacles, indirect-fire targets, and routes in the sector must be coordinated before conducting the passage of lines. The assisting unit provides mobility support along cleared routes and corridors in its sector for the passing unit.

Engineers must complete clearing operations before the passage begins. The assisting unit also closes the lanes once passage is complete. The passing unit must plan and organize for conducting internal breaching and river-crossing operations before initiating the passage of lines. This should ensure responsive mobility operations if the enemy blocks routes during the passage.

RETIREMENT

Retirements are rearward movements away from the enemy by a force not in contact. Typically, another unit's security forces cover their movement as they conduct a tactical road march. A retirement follows the same sequence as a delay. Speed is important; therefore, engineers should focus on mobility for the retiring unit and expect operations such as route clearance and route repair.

DENIAL MEASURES

Denial measures are actions taken to hinder or deny enemy use of resources or facilities. In retrograde crossings, the commander includes bridges and crossing sites in his denial measures.

The laws of war require that denial operations, particularly against civilian resources such as existing bridges, be carefully considered and that execution authority to destroy the structure be maintained at the highest level.

A defending-force commander is responsible for preparing existing bridging and other crossing means in his sector, such as ferries, for destruction to prevent their use by the enemy. The CAE controls the engineers who prepare those targets. The timing of their destruction depends on their use in supporting the crossing. When the tactical situation dictates that crossing sites are no longer needed or the risk of capture outweighs their usefulness, the defending force must destroy them.

Use of bridges in the retrograde requires a redundant means of bridge destruction and a robust demolition guard with an engineer demolition party (see *FM 5-250*). Engineer light diving teams can be used to survey and emplace, prime, and detonate explosives on bridge supports to deny enemy access during retrograde operations. Because of the severe consequences of a premature decision to destroy a site, the division commander usually designates sites as reserve targets and issues specific orders stating under what conditions and by whose authority this destruction can be done.

Engineers destroy military bridges that they cannot recover quickly. Bridge stocks are in short supply; therefore, if existing bridges are sufficient to support the retrograde, the engineers recover military bridges early. In addition, the denial of major existing bridges can be so important that the commander may choose to destroy them early and rely on military bridges to cross the remainder of his force. The ribbon bridge is preferred for this crossing because of its recovery speed. Engineers either recover lines of communication (LOC) bridges well before the enemy arrives or destroy those left in place after the delay.

PLANNING

The division commander identifies the holding line and the units required to fight the delay and defense battles. The division engineer, in conjunction with the G3, identifies crossing sites and required crossing assets. The division staff coordinates for additional corps assets. The staff uses the planning process identified in *Chapter 4*.

The commander uses deception to conceal the extent of the operation and the actual crossing sites. Smoke, electronic warfare, and dummy sites reduce the enemy's capability to disrupt the crossing. OPSEC keeps the enemy-intelligence collectors from identifying the time and place of the crossing. The commander may consider retaining fixed bridges in defense of the river line if he anticipates future counterattacks back across the river. He may also partially destroy bridges to ease restoration in future offensive operations, weighing this decision against the enemy's use of the bridges.

Denial operations are somewhat restrictive. Only those civilian targets with a clearly identified military value can be destroyed or removed. Coordination between the theater command and the host-nation government is important in the policy-development process.

LESSON 3
PRACTICE EXERCISE

Note: The following exercises are study aids. Print this sheet and write your answer in the space provided below each question. When you have finished answering all the questions for this lesson, compare your answers with those given by following the link at the bottom of this page. Review the lesson as necessary.

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1. Intelligence preparation of the battlefield (IPB) is conducted during which step of the planning process?

2. List the seven steps in the planning process.

3. War gaming is conducted during which step of the planning process?

4. List the four phases of a deliberate river crossing.

5. During which phase of a deliberate river crossing is the crossing area activated?

6. Which two objectives are within the crossing area?

7. List the three types of retrograde operations.

8. A delay combined with a retrograde river crossing has three phases. Name the phases.

ANSWER KEY AND FEEDBACK

1. Intelligence preparation of the battlefield (IPB) is conducted during which step of the planning process?

   Analyze the mission. See FM 90-13.

2. List the seven steps in the planning process.

   Receive the mission, analyze the mission, develop courses of action (COAs), analyze COAs, compare COAs, approve a COA, and produce orders. See FM 90-13.

3. War gaming is conducted during which step of the planning process?

   Analyzing COAs. See FM 90-13.

4. List the four phases of a deliberate river crossing.

   Advance to the river, assault across the river, advance from the exit bank, and secure the bridgehead line. See FM 90-13.

5. During which phase of a deliberate river crossing is the crossing area activated?

   Phase II (assault across the river). See FM 90-13.

6. Which two objectives are within the crossing area?

   The nearshore and far-shore objectives. See FM 90-13.

7. List the three types of retrograde operations.

   Delay, withdrawal, and retirement. See FM 90-13.

8. A delay combined with a retrograde river crossing has three phases. Name the phases.

   Delay, crossing, and defense. See FM 90-13.

APPENDIX A

LIST OF COMMON ACRONYMS

AA	assembly area
ACCP	Army Correspondence Course Program
ACE	M9 armored combat earthmover
AD	air defense
ADA	air-defense artillery
ADC	assistant division commander
AFB	assault float bridge
AIPD	Army Institute for Professional Development
alt	alternate
AMEDD	Army Medical Department
APO	Air Post Office
AT	antitank
attn	attention
AUTOVON	automatic voice network
AV	AUTOVON
AVLB	armored vehicle-launched bridge
AWR	answer weight reference
BC	before Christ
BMAIN	brigade main command post
BTAC	brigade tactical command post
C^2	command and control

CAC	crossing-area commander
CAE	crossing-area engineer
CAS	close air support
cbt	combat
CCIR	commander's critical information requirements
CFC	crossing-force commander
CFE	crossing-force engineer
COA	course of action
CP	command post
CSC	crossing-site commander
CSS	combat service support
DINFOS	Defense Information School
DMAIN	division main command post
DREAR	division rear command post
DSN	Defense Switched Network
DTAC	division tactical command post
DTO	division transportation officer
EA	engagement area
EEP	engineer equipment park
EN	engineer
ERP	engineer regulating point
FEBA	forward edge of the battle area
FM	field manual
FRAGO	fragmentary order

FSCL	fire-support coordination line
G2	Assistant Chief of Staff, G2 (Intelligence)
G3	Assistant Chief of Staff, G3 (Operations and Plans)
G4	Assistant Chief of Staff, G4 (Logistics)
H	H-hour. As used in this publication, refers to the specific hour the assault phase begins.
HDSB	heavy dry-support bridge
HIMAD	high-to-medium-altitude air defense
IDP	initial-delay position
int	intermediate
IPB	intelligence preparation of the battlefield
IPD	Institute for Professional Development
Jan	January
JFK	John Fitzgerald Kennedy
km	kilometer(s)
LOA	limit of advance
LOC	lines of communication
LTC	lieutenant colonel
LTG	lieutenant general
MCWP	Marine Corps Warfighting Publication
METT-T	mission, enemy, terrain, troops, and time available
MG	major general
MGB	medium-girder bridge
MI	middle initial

MO	Missouri
MP	military police
Mt	mount
obj	objective
OCOKA	observation, cover and concealment, obstacles, key terrain, and avenues of approach
OPORD	operation order
OPSEC	operations security
PFS	pipe fascines system
PL	phase line
prep	preparation
RB	ribbon bridge
RB15	rubber boat 15
RCOAC	Reserve Component Officer's Advanced Course
reg	regulation
RL	release line
RP	release point
RS	response sheet
RYE	retirement year ending
S2	Intelligence Officer (US Army)
S3	Operations and Training Officer (US Army)
S4	Supply Officer (US Army)
SGT	sergeant
SHORAD	short-range air defense

SOP	standing operating procedure
SP	start point
SSN	social security number
TAC	tactical command post
TCP	traffic-control post
TF	task force
TM	technical manual
US	United States
USC	United States Code
VA	Virginia
WO	warning order
XO	executive officer